

### **ABSTRACT**

Detection systems and methods of their use are provided. An exemplary system comprises a chamber for holding culture media, the chamber having a cellular attachment surface, and a detector disposed in the 5 chamber comprising a surface modified with a binding agent for binding a target substance wherein the detection system is configured to detect interaction of the target substance with the binding agent. The detection can occur in either liquid or vapor phase and the subsequent action of the system is to respond in a programmed and appropriate manner to the binding event 10 by activation of a chemical or physical responder. The system may also respond by communicating information to a control system via an alarm.